



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,829	01/25/2001	Frank Rui-Feng Chu	ARC920000016US1	2605

26381 7590 12/05/2003
LACASSE & ASSOCIATES, LLC
1725 DUKE STREET
SUITE 650
ALEXANDRIA, VA 22314

EXAMINER

JORGENSEN, LELAND R

ART UNIT	PAPER NUMBER
----------	--------------

2675

DATE MAILED: 12/05/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

14

Office Action Summary

Application No.

09/768,829

Applicant(s)

CHU ET AL.

Examiner

Leland R. Jorgensen

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicants filed an appeal after examiner issued a final rejection. After the final rejection, however, examiner discovered new prior art that anticipates applicants' invention. Both the newly discovered prior art and applicants' present claimed invention are both assigned to the same assignee, although the new prior art was not disclosed the information disclosure statement filed by applicants. Therefore, examiner issues a new action rejecting most of applicants' claims in light of the newly discovered prior art.

Claim Objections

2. Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 11 is dependant on claim 8. Claim 8 teaches a first set of input keys located on the top surface. Claim 11 teaches that the first set of input keys include one or more of the first set of input keys in located on a side surface. Claim 8 broadens rather than narrows claim 8.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 2675

4. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al., USPN 5,661,476.

Claim 1

Wang teaches a reduced set character entry system for an electronic appliance comprising a first set of multiple keys, 102-7 – 102-11. The first set of multiple keys represents a selected subset comprising a single row of characters from a set of QWERTY style keyboard rows, 103a – 103c. Each of the keys is associated with a character of the selected subset such that when any of the first set of multiple keys is actuated the associated character is input to the electronic appliance. Wang, col. 3, lines 21 – 53; and figure 1a.

Wang teaches a second set of keys, at least one of the second set of keys actuated to change the selected row, 102-1 – 102-6. Wang, col. 3, lines 21 – 53; and figure 1a.

Wang teaches an electronic appliance display 101, the display displaying the characters of the selected row 101a. Wang, figure 1b; col. 2, lines 27 – 33.

Claim 2

Wang teaches that the electronic appliance display additionally displays previously input characters. Wang, col. 3, line 67 – col. 4, line 2.

Claim 6

Wang teaches one of the second set of keys is actuated to shift the case of the characters associated with the first set of keys. Wang, col. 3, lines 65 – 67.

5. Claims 15, 16, 18, 19, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Lu, EP 0,889,388 A1.

Claim 15

Lu teaches a compact keyboard input device for an electronic appliance. Lu, col. 1, lines 8 – 12; col. 5, lines 9 – 11. The input device comprises a set of character input keys. Lu, figures 2 – 7. The set is less in number than an input character set. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figure 1. The set is displayed in a single row. Lu, figures 1 – 7. Each of the keys comprising an electronic character display and corresponding input mechanism. Lu, col. 5, line 56 – col. 6, line 16; and figures 1 – 7.

Each of the displays (small area of the touch screen corresponding to a letter) shows an individual character of the input character set associated with the display. See e.g., Lu, figures 1 – 7. Actuation of the corresponding input mechanism causes the displayed character to be input to the electronic appliance. Lu, col. 6, lines 14 – 16.

Lu teaches at least one selection key [a, g, m, s, y, and 0]. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Actuation of the selection key causes each of the displays to display a different individual character of the input character set. Lu, col. 6, lines 1 – 13.

Claim 16

Lu adds that the electronic appliance has an output display. The output display displays previously entered characters. Lu, col. 6, line 36 – col. 7, line 7; and figures 3 - 7.

Claim 18

Lu teaches a control key [toggle shift button] that switches the displayed characters between upper case and lower case characters. Lu, col. 5, lines 14 – 19; and figure 1.

Claim 19

Lu teaches that the input character set is alphabetic and numeric. Lu, col. 5, lines 9 – 15; and figure 1.

Claim 30

Lu teaches an electronic appliance such as hand-held personal digital assistant or a pager. Lu, col. 1, lines 6 – 7; col. 10, lines 9 – 12. It is inherent that a personal digital assistant or a pager includes a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. Lu teaches a first set of input keys located on a side surface. Lu, figures 2 – 7. The set comprises a single row of characters. Lu, figures 1 – 7. Each of the input keys is associated with an individual character of a first subset of a set of input characters. The subset comprising a row of characters from a set of keyboard rows. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figure 1. Actuation of any of the input keys causes the character associated with the actuated input key to be input to the electronic appliance. Lu, col. 6, lines 14 – 16. Lu teaches at least one selection key [a, g, m, s, y, or 0] located on a side surface. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Actuation of the selection key changes the first subset to a second subset so that each of the input keys is associated with an individual character of the second subset and the display is changed to display the second subset. Lu, col. 6, lines 1 – 13.

Claim Rejections - 35 USC § 103

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Acevedo, USPN 5,818,361.

Claim 3

Wang does not teach that each of the first set of multiple keys comprises an electronic character display and input mechanism.

Acevedo teaches that each of a set of multiple keys comprises an electronic character display and input mechanism, the electronic character display retaining an image of an associated character. Acevedo, col. 3, lines 1 – 4; col. 4, lines 1 – 7; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the display keys of Acevedo with the reduced character entry system of Wang. Acevedo invites such combination by teaching.

In this respect, the display keyboard according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of displaying the alphanumeric character, task, and indicia associated with a key of a keyboard for a plurality of software applications.

Therefore, it can be appreciated that there exists a continuing need for a new and improved display keyboard which can be used for displaying the alphanumeric character, task, and indicia associated with a key of a keyboard for a plurality of software applications. In this regard, the present invention substantially fulfills this need.

Acevedo, col. 1, lines 34 – 47. Acevedo adds the following advantages.

Each display key has a liquid crystal display, light emitting diode display, or any future state of the art display invention situated thereon for depicting alphanumeric characters, symbols, special characters, pictures, icons, abbreviations, short explanations, and indicia. Such versatility is especially beneficial in games wherein pictures of fire buttons, ray guns, laser guns, cannons, throttles, steering wheel-like controls, pedals, and brakes may be depicted to represent a function of the present game. The display keys are also capable of depicting a foreign alphabet such as Greek, Russian, Arabic, Chinese, and Japanese along with any accompanying symbols such as tildes. The display keys are adapted to change color to further differentiate between alphanumeric characters (i.e., numbers and letters) and keys that have functions that differ such as in the application of games. The color of all the display keys may also be

Art Unit: 2675

selected as a matter of personal preference. Alternatively, each display key may comprise of a light emitting diode display. Such display keys are easily removed and replaced if required. As an option, each of the display keys may be equipped with a light to allow the utilization thereof in the absence of ambient light.

Acevedo, col.4, lines 3 – 24.

7. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Abraham, USPN 5,841,374.

Claim 4

Although Wang does not specifically teach a top surface, bottom surface, a plurality of side surfaces connecting the top surface and the bottom surfaces, with the electronic appliance display disposed on the top surface, such is inherent to the appliance taught by Wang. Wang, however, does not teach the first set of at least ten keys disposed on the top surface, and the second set of keys disposed on one or more of the side surfaces.

Abraham teaches a top surface (see figure 1), a bottom surface (see figure 2); a plurality of side surfaces connecting the top surface and the bottom surface (edge 22); with the electronic appliance display disposed on the top surface (see figures 1 and 2). Abraham also teaches a first set of at least ten keys disposed on the top surface [keys 16 or 21], and a second set of keys disposed on one or more of the side surfaces [thumb keys 20]. Abraham, col. 3, lines 3 – 22; col. 6, lines 16 – 19; and figures 14 and 15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the top and side keys of Abraham with the reduced character entry system of Wang. Abraham invite such combination, teaching,

Therefore, there is a need for a smaller microcomputer that can be easily carried in one's pocket and which allows for rapid data entry with both hands in a manner similar to that used with a standard key pad. There is a further need to reduce the size of a keyboard by limiting the number of keys to less than twenty while retaining the same characters and functions as that of the standard 104 computer keyboard without the use of mapping or modifiers.

Abraham, col. 1, lines 40 – 47. Abraham teaches about its key arrangement, “Yet another object of the invention is to provide an improved keyboard, the keys thereof being more ergonomic, by utilizing the thumbs to operate some keys located along the edges of the keyboard.” Abraham, col. 2, lines 28 – 31.

Claim 5

Abraham teaches a top surface (see figure 1), a bottom surface (see figure 2); a plurality of side surfaces connecting the top surface and the bottom surface (edge 22); with the electronic appliance display disposed on the top surface (see figures 1 and 2). Abraham also teaches one or more of the first and second set of keys are disposed on one or more of the side surfaces [thumb keys 20]. Abraham, col. 3, lines 3 – 22; col. 6, lines 16 – 19; and figures 14 and 15.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Moon, USPN 5,812,117.

Claim 7

Although the up-down left-right keys shown in figures 1a – 1c of Wang strongly suggest such ability, Wang does not specifically teach such keys.

Moon teaches two such keys B2. Moon, col. 3, lines 24 – 49; and figure 2B.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the scroll keys of Moon with the reduced character entry system of Wang to allow

Art Unit: 2675

quicker and more efficient entry of keyed data. Moon invites such combination. After noting problems with prior art, Moon teaches,

However, there are problems in adopting the soft keyboard having the above keyboard arrangement for a portable personal terminal having a small display device. That is, since the keyboard arrangement of a PC is best-suitable for two-handed input, difficulties arise when inputting information using only one pen, which is presumably performed with one hand. Also, since the arrangement of the conventional soft keyboard coincides with that of the ordinary PC keyboard consisting of a plurality of keyboard rows, the area occupied by the keyboard is great, which is not idea for the display in a computer having a small display screen. To overcome this problem, the soft keyboard may be shifted on the screen; however, this causes a great deal of inconvenience when inputting large amounts of data.

Moon, col. 1, lines 45 – 58. Moon adds as an object of its invention “to provide a portable information terminal adopting a soft keyboard whose screen-occupying area is reduced, to minimize data input inconveniences caused by a large screen-occupying area.” Moon, col. 1, lines 61 – 64. Moon concludes,

As described above, the portable information terminal according to the present invention receives information by contacting the position of a corresponding soft keyboard with a pen when part of the keys are displayed on the screen of the LCD or the corresponding information keys are displayed on the screen using a horizontal or vertical scroll key, if necessary. Therefore, the area of screen occupied by the soft keyboard is minimized so that the inconvenience generated during inputting of data is reduced.

Moon, col. 4, lines 25 – 33.

9. Claims 8, 9, 12, and 31 - 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Will, USPN 5,825,353.

Claim 8

Lu teaches an electronic appliance such as hand-held personal digital assistant or a pager. Lu, col. 1, lines 6 – 7; col. 10, lines 9 – 12. It is inherent that a personal digital assistant or a pager includes a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. Lu teaches a first set of input keys located on the top surface. Lu, figures 2 – 7. The set comprises a single row of characters. Lu, figures 1 – 7. Each of the input keys is associated with an individual character of a first subset of a set of input characters. The subset comprising a row of characters from a set of keyboard rows. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figure 1. Actuation of any of the input keys causes the character associated with the actuated input key to be input to the electronic appliance. Lu, col. 6, lines 14 – 16.

Lu teaches at least one selection key [a, g, m, s, y, or 0]. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Lu teaches a display located on the top surface. Lu, figures 1 – 7. The display displaying the first subset of input characters. Lu, col. 5, line 56 – col. 6, line 16; and figures 1 – 7. Actuation of the selection key changes the first subset to a second subset so that each of the input keys is associated with an individual character of the second subset and the display is changed to display the second subset. Lu, col. 6, lines 1 – 13.

Lu does not teach that the selection key is located on one of the side surfaces.

Will teaches a selection key [thumbwheel 3] that is located on one of the side surfaces. Will, col. 4, line 44 – col. 5, line 6; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the selection key located on the side as taught by Will with the electronic appliance

Art Unit: 2675

as taught by Lu to further decrease the size of the electronic appliance. Lu invites such combination by teaching,

There is a particular need, then, for alternative ways to control PDAs and for entry of alphanumeric text to PDAs that are contained in very small packages. The invention disclosed here is particularly directed toward this need for a user interface for miniature PDAs that allows simple and effective control of applications and that, in addition, can effectively input small amounts of alphanumeric data.

Will, col. 2, lines 31 – 37. Will adds,

The goal of the invention disclosed here is to provide a method and apparatus for the control of a miniature, handheld personal digital assistant and the entry of alphanumeric characters into that device.

The method is particularly applicable to a personal digital assistant the approximate size and shape of a credit card and which contains a telephone and address directory, datebook, calendar, and similar functions. It is also applicable to a cellular telephone, particularly one of small size and in which it is desirable the include a telephone directory and similar functions.

Will, col. 2, lines 40 – 51.

Claim 9

Lu adds that the output display displays previously entered characters. Lu, col. 6, line 36 – col. 7, line 7; and figures 2 - 7.

Claim 12

Lu teaches that the input character set is alphabetic and numeric. Lu, figure 1.

Claim 31

Will teaches that the electronic appliance may be a portable phone. Will, col. 12, lines 51 – 64; and figures 11a and 11b.

Claims 32 and 33

Will teaches that the input keys 179 and the selection key [thumbwheel 183] are located on different ones of the side surfaces. Will, col. 12, lines 51 – 64; and figures 11a and 11b.

10. Claims 10, 11, 13, and 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Will as applied to claim 8 above, and further in view of Kaehler, USPN 5,128,672

Claim 10

Neither Lu nor Will specifically teach a plurality of displays.

Kaehler teaches that the display comprises a first display showing the previously input characters [text display 12] and a second segmented display comprising each of the first set of input keys [character set display screen 14]. Kaehler, col. 4, lines 4 – 26; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the plurality of displays as taught by Kaehler with the electronic appliance as taught by Lu in view of Will because separating the keyboard and display area would be easier to produce and to use. See Kaehler, col. 4, lines 35 – 38.

Claim 11

Will teaches that the selection key is located on the side. Kaehler teaches keys on the side surfaces.

Neither Lu, Will, nor Kaehler, however, specifically state that one or more of the first set of input keys are on a side surface.

Art Unit: 2675

It would have been obvious to one of ordinary skill in the art at the time of the invention to place one or more of the first set of input keys on one of the side surfaces of Lu, Will, or Kaehler. Kaehler invites such combination.

An object of the present invention is to reduce the number of keys required on a keyboard, thereby reducing its size, without significantly increasing the number of keystrokes (typed keys) required to type all of the characters of the QWERTY keyboard. The present invention meets this objective by providing a keyboard having a minimal number of keys while providing all of the characters of a QWERTY keyboard and minimizing the number of keystrokes to type the characters of the QWERTY keyboard. In the present invention, unlike a standard fixed keyboard, some if not all of the keys are dynamic, in that they have the ability to display different characters while the keyboard is in use. Hence, each key may represent several letters, digits, or symbols. Although different arrangement are quite possible, each key typically only represents a single character at a time and each character is typically only displayed at one key location. In addition, the user has the ability to manually cause the set of characters being displayed to change, such as by selecting either the Shift, Flip or Delete characters, which are fixed characters further described below, or to predictively change the character set layout by simply selecting a character to be typed.

Kaehler, col. 5, lines 38 – 61. Kaehler invites one to consider different arrangements to met this object.

Although the present invention has been described with reference to FIGS. 1-6 and with emphasis on a particular embodiment, it should be understood that the figures are for illustration only and should not be taken as limitations upon the invention. It is contemplated that many changes and modifications may be made by person of ordinary skill in the art to the elements, process and arrangement of elements or steps of the invention without departing from the spirit and scope of the invention as disclosed above.

Kaehler, col. 12, lines 24 – 33.

Claim 13

Kaehler teaches a control key located on one of the side surfaces [shift buttons 18] that switches the displayed characters between upper case and lower case characters. Kaehler, col. 7, line 43 – col. 8, line 15; col. 9, line 63 – col. 10, line 22.

Claim 34

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1. Will teaches that the selection key is located on the side.

Neither Lou, Will, nor Kaehler, however, specifically state that one or more of the first set of input keys are on a side surface.

For the reasons stated in the discussion about claim 11 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys opposite to the side surface having the selection key located thereon.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Will as applied to claim 8 above, and further in view of Wang.

Claim 14

Neither Lu nor Will specifically teach that the subsets are rows of a QWERTY style keyboard layout.

Wang teaches subsets that are rows of a QWERTY style keyboard layout 103a – 103c. Wang, col. 3, lines 21 – 53; and figure 1a.

Art Unit: 2675

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the rows of a QWERTY style keyboard layout as taught by Wang with the reduced keyboard of Lu and Will because so many users are familiar with the QWERTY keyboard.

Wang invites such combination by teaching,

Integrated circuits have enabled the proliferation of handheld miniature computers with powerful storage, processing, and communication capabilities. These computers include what are known as "personal digital assistants", which are used for such applications as information organization, "personal communicators", or other information access applications. Collectively, such devices are popularly known as personal information devices (PIDs). As PIDs continue to be miniaturized for portability reasons, equipping these PIDs with "QWERTY" style keyboards as primary input devices has become impractical. Any attempt to implement a full keyboard on a PID inevitably results in a design with either keys that are arranged too close for comfortable and accurate operation, or a PID housing which is significant larger than desired, or both. For example, many electronic organizers with a full computer keyboard are simply too big to be carried like a pager (e.g. clipped to a belt, or comfortably placed in a shirt pocket).

Wang, col. 1, lines 9 – 26. Wang adds,

In addition, it is desired to minimize both power consumption and the physical size of the PID. Power consumption is minimized if the character input operation does not depend on a computationally intensive mechanism, like the voice or handwriting recognition techniques discussed above. By avoiding computationally intensive operations, a longer battery life between charging results.

Wang, col. 1, lines 57 – 63. Wang concludes,

The present invention is especially applicable to two-way wireless portable electronic messaging devices, such as two-way pagers, palmtop computers and other small portable electronic devices, to which miniaturization is important. Because only a small number of keys are needed to enable selection of a large number of selections, a high percentage of the total surface area of the device's housing can be allocated to provide a relatively large display.

Wang, col. 2, lines 44 – 51.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Kaehler.

Claim 17

Lu teaches an electronic appliance such as hand-held personal digital assistant or a pager. Lu, col. 1, lines 6 – 7; col. 10, lines 9 – 12. It is inherent that a personal digital assistant or a pager includes a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. The display is located on the top surface. Lu, figures 3 – 7.

Kaehler teaches that one or more of the character keys and selection keys 18, 20, and 22 are disposed on one or more of the side surfaces. Kaehler, figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the placement of keys as taught by Kaehler with the reduced keyboard of Lu to better utilize the sparse space on the electronic appliance.

13. Claims 20 – 29 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macor, USPN 5,841,849, in view of Lu.

Claim 20

Macor teaches an electronic appliance having an input/output device comprising a display [functional display 130], a wrist band [appendages 100 and 102] connected to the display for securing the display to the wrist of a user, and a flexible assembly [door 108 and formatted information display 126] operatively connected to the display. Macor, col. 3, lines 32 – 60; and figures 2, 3, 5, 7, 9, and 11. Macor teaches “Regarding the sizes of the elements of the wearable

Art Unit: 2675

device 103, function display 130 and formulated information display 126 have the smallest size that allows the user to discern the symbols, virtual keys and buttons appearing at both displays.”

Macor, col. 3, lines 56 – 60.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Lu teaches a set of character keys. Lu, figures 2 – 7. Each of the character keys is associated with an individual character of a selected set of input characters. Lu, col. 5, line 56 – col. 6, line 16; and figures 1 – 7. The selected set comprises a single row of characters from a set of keyboard rows. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figures 1 – 7. Lu teaches at least one control key [a, g, m, s, y, and 0]. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Actuation of any of the characters keys causes the character associated with the actuated key to be input into the device. Lu, col. 6, lines 14 – 16. Actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. Lu, col. 6, lines 1 – 13. See discussion of claim 15 above.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry system of Lu with the wrist mounted input/output device of Macor to provide a wrist watch having a input/output device with a reduced sized keyboard that allows speedy data entry. Lu invites such combination by teaching,

It is therefore an object of the invention to provide a user interface, usable with a general purpose display (e.g. Bit-array type) for a small computer device, which facilitates quick and accurate user test input.

It is a further object of the invention to provide a user interface for a small hand-held computer device which displays information on a touch-screen device, the information being large enough to be easily touch-selected by the user.

Art Unit: 2675

Lu, col. 2, lines 39 – 40. Lu concludes,

Thus, it can be seen that the present invention is new and unique by virtue of a multi-level layout of the screen keyboard. This layout minimizes the screen real estate, while still allowing convenient and speedy data entry at the same time.

Lu, col. 16, lines 17 – 21.

Claim 21

Macor teaches that the flexible assembly is pivotal from a position where the assembly extends substantially along and underneath the wristband to a position substantially perpendicular to the wristband. Macor, col. 3, lines 47 – 50; figures 2 and 3.

Claim 22

Macor teaches that the electronic appliance is a wristwatch. Macor, col. 3, lines 41 – 42; and figure 2.

Claim 23

Macor teaches a portable phone including a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces, the portable phone comprising a display [function display 8] located on the top surface [inner surface 10]; and an input assembly [second base member 4 and formulated display 16] operatively connected to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Lu teaches a set of character keys. Lu, figures 2 – 7. Each of the character keys is associated with an individual character of a selected set of input characters. Lu, col. 5, line 56 – col. 6, line 16; and figures 1 – 7. The selected set comprises a single row of characters from a

Art Unit: 2675

set of keyboard rows. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figures 1 – 7. Lu teaches at least one control key [a, g, m, s, y, and 0]. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Actuation of any of the characters keys causes the character associated with the actuated key to be input into the device. Lu, col. 6, lines 14 – 16. Actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. Lu, col. 6, lines 1 – 13. See discussion of claim 15 above.

For the reasons stated in the discussion of claim 20 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry system of Lu with the portable phone of Macor to provide a phone display having a input/output device with a reduced sized keyboard that allows speedy data entry.

Claim 24

Macor teaches that the input assembly is integrated with the portable phone. The input assembly is rotatable from a closed position where the input assembly is substantially enclosed within the housing to a position where the character keys and the control key are exposed for actuation. Macor, col. 1, lines 48 – 65; col. 2, lines 45 - 53.

Claim 25

Macor teaches that the input assembly's axis of rotation is perpendicular to a plane containing the side surfaces. Macor, figures 1, 4, 6, 8, and 10.

Claim 26

Macor shows that the input assembly is externally attachable to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Claim 27

Macor teaches an electronic appliance including a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. An input assembly [second base member 4 and formulated display 16] is integrated connected to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10. The input assembly is rotatable from a closed position where the input assembly is substantially enclosed within the housing to a position where the character keys and the control key are exposed for actuation. Macor, col. 1, lines 48 – 65; col. 2, lines 45 - 53.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Lu teaches a set of character keys. Lu, figures 2 – 7. Each of the character keys is associated with an individual character of a selected set of input characters. Lu, col. 5, line 56 – col. 6, line 16; and figures 1 – 7. The selected set comprises a single row of characters from a set of keyboard rows. Lu, col. 5, lines 9 – 48; col. 6, lines 1 – 13; and figures 1 – 7. Lu teaches at least one control key [a, g, m, s, y, and 0]. Lu, col. 5, lines 56 – 58; col. 7, lines 17 – 26; and figures 2, 8, and 9. Actuation of any of the characters keys causes the character associated with the actuated key to be input into the device. Lu, col. 6, lines 14 – 16. Actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. Lu, col. 6, lines 1 – 13. See discussion of claim 15 above.

For the reasons stated in the discussion of claim 20 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry

Art Unit: 2675

system of Lu with the portable phone of Macor to provide a phone display having a input/output device with a reduced sized keyboard that allows speedy data entry.

Claim 28

Macor teaches that the input assembly's axis of rotation is perpendicular to a plane containing the side surfaces. Macor, figures 1, 4, 6, 8, and 10.

Claim 29

The electronic appliance has a display [function display 8] located on the top surface [inner surface 10]. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Claim 35

Macor show a display located on the top surface. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10. Macor teaches that the information displayed on the display is rotated to be in an orientation appropriate for viewing by a user utilizing the input keys. Macor, col. 1, lines 48 – 65; col. 2, lines 45 – 53; and figures 1, 4, 6, 8, and 10.

14. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Kaehler as applied to claim 17 above, and further in view of Lo, USPN 6,072,471.

Claim 36

Neither Lu nor Kaehler teach that an equal number of input keys and selection keys are located upon the first one and second one of the side surfaces.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side

Art Unit: 2675

from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys and the selection key upon the first one and second one of the side surfaces of Kaehler to better utilize the limited space on the electronic appliance.

Lo teaches keys that can be selectively activated and disabled so that the keys may be operated by the dominate hand. Lo, col. 4, lines 1 – 13; and figure 14.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the light-right switching mechanism of Lo with the electronic appliance of Kaehler to produce an electronic appliance having input keys and selection keys that may be operated by the dominate hand. Lo invites such combination by teaching,

The ergonomic mouse is adapted for a particular hand, i.e., either the right or left hand. Also shown is an ambidextrous version with a pair of upright, finger engaging sides mirrored about a vertical longitudinal plane. Although about 90% of mouse users are right-handed and only about 10% are left-handed, an ambidextrous version is important because most mice are sold bundled with computer systems, and a bundled mouse must suit all users.

Lo, col. 1, lines 30 – 37. Lo adds the following objects of its ambidextrous electronic device.

Support a hand in a relatively upright position, so as to avoid causing twisting and other deviations of the hand and arm.

Accommodate both right-handed and left-handed users.

Provide ambidexterity without compromising comfort.

Provide exactly the same feel and comfort for both hands.

Enable fine and precise maneuvering by flexing fingers and thumb, without requiring movement of the whole arm.

Art Unit: 2675

Provide right-handed and left-handed sets of buttons which can be alternately disabled.

Lo, col. 1, lines 43 – 53. Lo concludes,

Accordingly, an ambidextrous upright computer mouse is provided for being grasped by a relatively upright hand, so as to avoid causing twisting and other deviations of the hand and arm. It can be used by both right-handed and left-handed users. It provides right-handed and left-handed sets of buttons which can be alternately disabled. It provides exactly the same feel and comfort for both hands. It provides ambidexterity without compromising feel and comfort.

Lo, col. 4, lines 37 – 44.

Response to Arguments

15. As to claims 1 – 7, applicants' arguments, see Appeal Brief, filed 8 October 2003, have been fully considered but they are not persuasive. See Final Rejection, mailed 8 April 2003, for a detailed discussion rejecting the same arguments.

Applicant's arguments, see Appeal Brief, filed 8 October 2003, with respect to the rejection(s) of claim(s) 8 – 36 under Kaehler have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lu.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Will, USPN 6,392,640 B1; and Griffin et al., USPN 6,489,950 B1, both teach a selector button [thumbwheel] on the side of a hand held electronic device. .

Art Unit: 2675

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

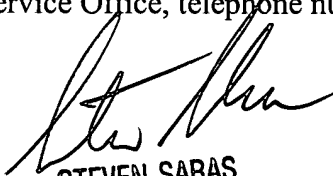
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj


STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600